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TAXONOMIC REVISION OF THE GENUS CAPSICUM IN WEST AFRICA

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INTRODUCTION

According to the Flora of West Tropical Africa (Hutchinson and Dalziel, 1954, 1958) there are two species of the genus *Capsicum* in West Africa, namely *C. annuum* L. and *C. frutescens* L. The present work has shown, however, that there is a third species which can be separated off the original *C. frutescens*. This third species answers correctly to *C. sinense* Jacq., which has been earlier noticed in the United States and described by two leading American workers, Smith and Heiser (1954, 1957a and b). This discovery plus the fact that this has lead to a re-evaluation of the principal characters used in identifying the three species, have made a taxonomic revision of the genus *Capsicum* in West Africa inevitable.

THE STATUS OF THE PEDICEL NUMBER

As evident from the Flora of West Tropical Africa, earlier workers on the genus seem to have placed so much reliance on the pedicel number at a node in distinguishing between the two original species *C. annuum* and *C. frutescens*. The former species is thus described in the Flora of West Tropical Africa as having one pedicel per node (and only rarely two at the first flowering node) while the latter *(C. frutescens)* is identified as having two or more pedicels per node. The present work has however shown that in order to distinguish between the three species that have emerged, it is no longer possible to use the pedicel number per node as the principal taxonomic character, since this character has been shown to be unreliable.

The unreliability of the pedicel number per node particularly when it comes to distinguishing between *C. frutescens* and *C. sinense* is partly due to the fact that while the average pedicel number per node for *C. frutescens* ranges between one and four, that of *C. sinense* ranges between two and seven. Even more important is the fact that pedicel number per node for a particular variety of a species varies so much. Some varieties have the tendency to drop off a fair number of their flower-buds before they are mature enough to set seed. But for nearly all varieties, the pedicel number seems to decrease during the dry period of the year. Finally younger plants tend to

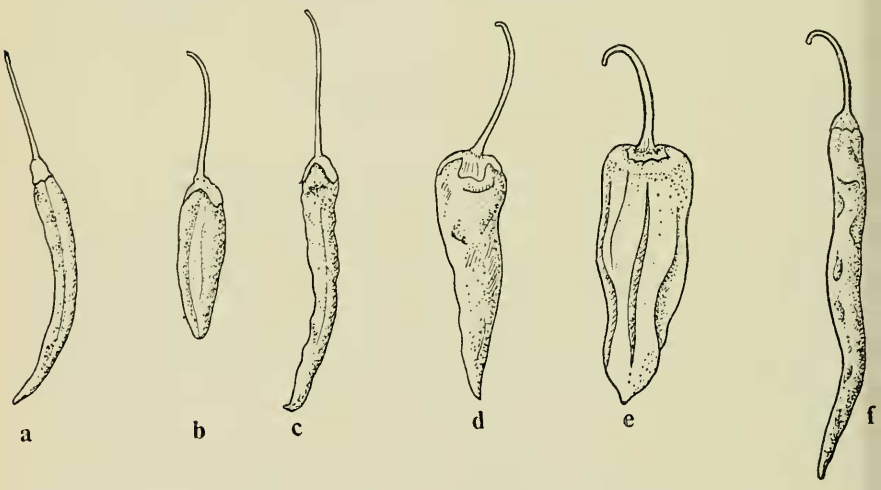
have higher average pedicel number per node than older plants, so that age seems to affect pedicel number.

Under these circumstances, unless one made a special study of the number flower-buds including the scars left by those that have been dropped, a wrong figure of pedicel number could easily be obtained.

THE NATURE OF THE CALYX AND THE PEDICEL

The present studies showed, however, that greater reliability now resides in such more permanent characters as (a) the nature of the calyx, that is, whether it is conical, cup-shaped or widely open (b) the presence or absence of a distinct circular constriction at the junction of the pedicel and the calyx and (c) the nature of the pedicel at anthesis, that is, whether erect or recurved.

Thus if the calyx was conical, particularly in a normal-sized fruit with no constriction between it and the pedicel, then the species must be *C. annuum.* If the calyx was cup-shaped (also with no constriction) the the species would be almost invariably *C. frutescens.* If on the other hand, there is a clearly marked constriction between the pedicel and the calyx, then irrespective of the shape of the calyx the species in question would be *C. sinense* (Fig. 1).



It may be pointed out that the shape of the calyx described here as a taxonomic character which distinguishes between *C. annuum* and *C. frutescens,* is not destroyed by the size of the fruit. Thus generally, the fruits of *C. frutescens* are small and narrow with a cup-shaped calyx which often encloses the narrower base of the fruit. However, in varieties with large

fruits, the base of the fruit is much larger, and here the calyx is found to be split into two or more parts in most of the fruits. This situation is quite unlike that in *C. annuum* which like *C. frutescens* has no constriction. Here the calyx rarely spits in large forms however large the base of the fruit. Rather the calyx seems to spread out to contain the size of the fruit at the base.

It may also be noted, that although some large forms of *C. annuum* may be found with some demarcation between the calyx and the pedicel, this is not like the clearly continuous constriction in *C. sinense* but is rather in the nature of wrinkled folds (Smith and Heiser, 1957a).

Finally, the disposition of the pedicel on the plant is also a useful character. If the pedicel is erect in bud, the species is likely to be *C. frutescens*, but when it is recurved in bud then it is possibly *C. sinense*. The pedicel could also be long and thin (typical of *C. frutescens* and *C. annuum)* or short and thick, which is typical of *C. sinense*.

NEW KEY

On the basis of the more permanent and hence reliable characters described above, a proposal is made as to a new key distinguishing the three species of *Capsicum* in West Africa, as shown below:

Calyx conical with no continuous constriction between it and the pedicel. Pedicel commonly one per node. Corollas clear white . . . . *C. annuum.*

Calyx cup-shaped, with no continuous constriction between it and the pedicel. Calyx often small endosing the rather narrow base of the fruit, but in forms with large fruits, the calyx is split into two or more parts. Pedicels number from one to about four per node, often erect at anthesis. Corolla greenish-yellow . . . . . *C. frutescens.*

Calyx wide-mouthed, with continuous constriction between it and the pedicel. Pedicels number from two to about seven per node, often recurved at anthesis. Corollas dull yellow . . . . . *C. sinense.*

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